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(54) Title: ORDERING ITEMS USING CATALOGS WHEREIN THE USER QUERIES A CENTRAL CATALOG AND IS LINKED SUPPLIER CATALOGS
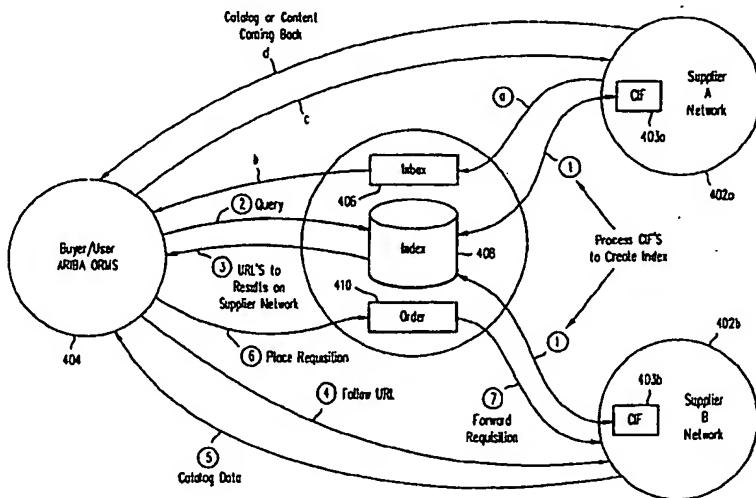
(57) Abstract

Method and apparatus are disclosed for ordering items using electronic catalogs including providing to buyers (404) index information (408) and directions (Step 3) to distributed supplier information which identifies goods and services of suppliers (402b) and providing ordering services (Step 6) to buyers and sellers by means of a global computer information network including transaction routing, multiple protocol support for exchanging content and transaction information and for converting an order into the suppliers' preferred protocol. An index to the items in the catalogs on a supplier computer system is stored on a public computer system (408) for generating a pointer (Step 3) for a customer to catalog information on the supplier computer system and then ordering a desired item (Step 6) from the public computer system in response to an order to the public computer system from the customer computer system.

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ORDERING ITEMS USING CATALOGS WHEREIN THE USER QUERIES A CENTRAL
CATALOG AND IS LINKED SUPPLIER CATALOGS

Technical Field

The present invention relates to e-commerce systems and, specifically, to a
highly distributed system for large-scale content and e-commerce
transactions over global computer networks, such as the internet.

Background

The network economy is rapidly taking shape, and electronic commerce
(eCommerce) is at the forefront of this emerging paradigm. The
eCommerce opportunity is expected to explode to over $1.1 trillion dollars
by the year 2002, according to several industry analysts. The business-to-
business sector will capture the majority of the dollars transacted for
eCommerce, an estimated $800 billion dollars.

A closer examination reveals the bulk of the spending activity associated
with business-to business eCommerce will originate from the acquisition
of "operating resources", the goods and services required to operate an
enterprise.

Acquiring operating resources is ideal for eCommerce because
traditionally they are acquired in a manual, paper-intensive manner—prone
to error, mistakes and inefficiencies. The expected savings associated with
reducing the costs of acquiring operating resources ranges from 5 – 15%.

Considering the dollars spent by a typical manufacturing corporation, resulting savings can have a significant bottom line benefit.

Conventionally, though, each supplier is "on its own" to provide its own buying relationship with customers. This has the disadvantage the

5   supplier's system is not linked into the buyer's processes (e.g., for approval and procurement). Thus, a system like OBI (Open Buying on the Internet, see http://openbuy.org) is desirable to "glue" the supplier's system to the buyer's system. Unfortunately, OBI still has the disadvantage that the end user doesn't necessarily know which supplier has the goods he wants. This

10   is a fundamental failing of basic OBI, since a primary task an end-user must perform when purchasing something is to find what he wants.

In order to deliver the expected benefits associated with business-to-business eCommerce, it is desirable that a solution provide:

■   Enterprise Connection of Users, Processes and Systems

15   ■   Scalable Connection of Buyers and Suppliers.

The Operating Resource Management System (ORMS), from Ariba Technologies, Inc. of Sunnyvale, California, is a customer-driven solution that enables buying organizations to achieve significant savings in acquiring operating resources. The Ariba ORMS is described in detail in

20   referenced International Application No. PCT/US98/08407 filed April 27, 1998 of which this application is a continuation-in-part and the contents of which are hereby incorporated herein by reference. An example of how the Ariba ORMS is used within an enterprise is provided in Fig. 1. The Ariba ORMS can do the following:

25   ■   Network Enabling Buyers;

■   Capturing Procurement Processes and Spending;

■   Network Enabling Enterprise Systems.

Conventionally, buying organizations use the Ariba ORMS to enable their corporate community of users, approvers and related departments to acquire all of their operating resources via a single, common networked infrastructure. The Ariba ORMS executes on a customer's corporate

5   intranet. Ariba ORMS provides a user access to catalogs that are stored on the user's own intranet system, and the Ariba ORMS channels the users to products and services from preferred suppliers while simplifying the numerous processes (e.g., approval within the organization) of acquiring operating resources. In addition, users have cross-process visibility and are

10   able to reference relevant information regarding the status of their requests.

The capture of all operating resources spending is important to achieving significant savings in acquiring these resources. Typically, different spending categories require unique procurement processes to request, approve and purchase the items of interest. The Ariba ORMS facilitates an

15   easy to understand presentation of each process to the user, so complexity is minimized, while still allowing the enterprise to model sophisticated process scenarios. In addition, internal acquisition processes are available within the Ariba ORMS, such as I/T service requests or new employee kits. Complete operating resources spend and process capture drives

20   maximum savings, as well as allowing for global collaborative buying across the enterprise.

A large number of large corporations require a heterogeneous enterprise resource planning systems environment. The seamless integration of these systems into the Ariba ORMS, as shown in Fig. 2, facilitates networked

25   information flow and provides for complete leverage of important information such as financial, human resource, security, inventory, messaging and other related data.

The adoption rate of business-to-business eCommerce systems is rapidly growing. In particular, the Ariba ORMS is a leader among global 2000 and

30   mid-size corporation.

Ariba's customer success and market leadership has created a critical mass of buying organizations that represent tens of billions of dollars of annual spending on operating resources. Each Ariba customer represents a network of people, systems and processes that govern the acquisition of operating resources for their enterprise.

The critical mass of buyers and the associated buying power has led to exponential supplier demand for participation. The supplier demand drives requirements for massive integration of product and service content. In addition, eCommerce transactions such as purchase orders, acknowledgements, change orders, order & ship status and invoices require massively scalable integration.

Existing solutions to large-scale integration of supplier content and eCommerce transaction integration include:

- Peer-to-Peer Networks

- Many-to-One-to-Many Networks

- Single Standard Networks

Peer-to-Peer Networks, such as Electronic Data Interchange (EDI), connect individual buying and selling organizations in a one-to-one manner. Electronic commerce has traditionally based interoperability on these one-to-one connections and Peer-to-Peer Networks have been quite effective for acquiring production and manufacturing resources.

However, operating resources are non-manufacturing goods and services acquired from thousands of suppliers, each with widely varying technical capabilities. Therefore, while Peer-to-Peer networks facilitate connections between buyers and suppliers, they are difficult to scale across the thousands of organizations that supply operating resources. This is due to the complexity and cost of establishing each one-to-one communication scenario.

Many-to-One-to-Many Networks provide a central repository or location for all content and transaction activity All buying activities are channeled through the central hub while all supplier interactions flow from the central hub. These networks aggregate supplier content in order to provide an effective means to find products or services of interest across multiple selling organizations. Aggregation of supplier content relies on normalization of the content where multi-sourcing of items is required. A system that aggregates supplier content in a public computer system is disclosed in U.S. patent no. 5,319,542 to King, Jr. et al.

Data normalization is the process of defining common descriptions and attributes for the same or similar products offered by different suppliers. To perform this function effectively domain expertise must exist in the industry or product area requiring normalization. Lack of domain expertise creates content aggregation challenges for Many-to-One-to-Many Networks.

While providing central control for the aggregation of supplier content, Many-to-One-to-Many Networks create bottlenecks that significantly limit the scalability of the network. These bottlenecks act as "choke points" for the network unless effective and efficient aggregation techniques based on relevant domain-based content expertise are used. Furthermore, at some point the amount of data to be aggregated simply becomes too large to be effectively and efficiently aggregated by any method. This type of system that aggregates supplier content simply will not easily scale to support a general system, since there are literally hundreds of thousands of suppliers and billions (or even perhaps, trillions) of items. In addition, as a practical business matter, it is a disadvantage to suppliers to be at the mercy of a third party to provide a selling interface to their customers. (They want to "own" their customers' buying experience with them.) Also, as a practical technical matter, suppliers must do a lot of work to "conform" to the aggregation system.

As for single standard networks, although an ideal theoretical concept, the adoption of a single standard for content and eCommerce transaction integration is highly unlikely. Several industry and geography-based initiatives exist to create common semantics for content and common formats for transactions, resulting in multiple standards. These initiatives seek to optimize communication, distribution and connection efficiencies within the industry or geographic region in addition to reducing associated costs.

Summary of the Invention

The present invention is directed to method and apparatus providing a large scale eCommerce integrated buyer-seller product and/or service procurement system including identification, offer, order and payment transactions.

The invention includes providing to buyers index information and directions to distributed supplier information which identifies goods and services of suppliers and providing ordering services to buyers and sellers by means of a global computer information network. The invention also includes order transaction routing, multiple protocol support for exchanging content and transaction information and for converting an order into the supplier's preferred transaction protocol.

Broadly stated the present invention is directed to a system for electronically ordering items having at least one supplier computer system storing at least one catalog containing items offered by the supplier and a customer computer system with the improvement of a public computer system comprising an index to the items in the catalogs on the at least one supplier computer system, means for querying the index on the public computer system for a desired item in response to a request for the desired item from the customer computer system and means for generating a pointer for the customer computer system to catalog information about the

desired item in the catalog on the at least one supplier system which has been identified by the query of the index.

In accordance with another aspect of the present invention, the public computer system includes means responsive to an order from the customer computer system for electronically ordering the desired item based upon the catalog information about the desired item accessed by the customer from the at least one supplier computer system.

The invention also includes the method of electronically ordering item which are listed in a catalog on one supplier's computer system for a customer having its own computer system and utilizing a public computer system comprising the steps of creating and storing on the public computer system an index to the items in the catalogs on the supplier computer system, querying the index on the public computer system for a desired item in response to a request for the desired item from the customer computer system and generating a pointer for the customer computer system to catalog information about the desired item in the catalog on the supplier system.

Another aspect of the present invention is utilizing the method set forth in the preceding paragraph and then ordering the desired item from the public computer system responsive to an order to the public computer system from the customer computer system.

Brief Description of the Figures

Fig. 1 shows schematic block diagram view of a conventional Ariba ORMS.

Fig. 2 is a schematic diagram which shows how enterprise resource planning systems integrate seamlessly into the Ariba ORMS.

Fig. 3 is a schematic block diagram illustrating an embodiment of the invention, including showing how the invention integrates with buyer organizations and supplier organizations.

Fig. 4 is a schematic block diagram illustrating a method for ordering an operating resource from supplier catalogs, using the invention.

Fig. 5 is a schematic block diagram illustrating how suppliers register contact information with the invention.

Fig. 6 is a schematic block diagram illustrating how the invention provides a single access point for order processing.

Fig. 7 is a schematic block diagram illustrating (along with a portion of Fig. 4) the content management service.

Detailed Description of the Preferred Embodiment

The present invention is the solution to large-scale content and eCommerce transaction integration. The invention is an entirely new paradigm that leverages networked economies of scale of the Internet. The invention provides a highly scaleable and distributed means of connecting the rapidly growing number of buyers using Ariba ORMS (or other customer-based systems) with a large number of suppliers. The invention also provides a range of Internet services for buyers and suppliers that accelerates the inherent advantages of business-to-business eCommerce and lowers the barriers of entry to participants. In addition to providing smooth access to supplier content and transparent transaction routing, in some embodiments, invention delivers business and information services as well.

The World Wide Web (or other global information network) provides an excellent medium for suppliers to offer their products and services to customers and prospective customers. Suppliers are able to create unique

branding of their offerings as well as establish competitive differentiation. The present invention leverages the scalability of the web's distributed many-to-many architecture by facilitating the use of heterogeneous supplier content managed by the supplier via their own eCommerce systems.

The invention provides support for numerous standard ways of exchanging content and transaction information. Preferred embodiments of this multi-protocol network allow buyers to send transactions (e.g., purchase requisitions) from Ariba ORMS in one standard format, which are then automatically converted into the suppliers' preferred transaction protocol. This infrastructure eliminates the reliance on a single standard for electronic commerce while giving suppliers the freedom to transact in their preferred protocol. As additional standard transaction and content protocols emerge, the invention may implement them.

The invention uses a unique and highly scalable approach for content management. This approach uses indexing, rather than content aggregation, to connect buying organizations using Ariba ORMS to suppliers' catalogs. This indexing approach eliminates the need to aggregate content in a central repository, yet provides robust and comprehensive searching tools to buyers. The invention may be thought of as a portal – a doorway through which a buying organization passes to access information about what is available in the marketplace.

The invention offers buying organizations the option of linking to approved supplier Web sites, sourcing goods and services through indices maintained with the invention, or caching indices of operating resources directly in Ariba ORMS, or both. It also allows suppliers to conduct business with buying organizations independent .

The ubiquity of the Internet and the widespread connectivity it provides to buyers and suppliers makes it a low cost and scalable platform for

eCommerce. The invention leverages this platform to achieve a secure, open and scalable content and transaction integration infrastructure.

As shown in Fig. 3, the public computer system 150 of this invention is a highly distributed solution for large-scale content and eCommerce transaction integration over the Internet. It provides a range of services for buying and selling organizations that accelerate the inherent advantages of a Networked ecosystem for business-to-business eCommerce. It also incorporates a number of Internet services, including catalog content management 102, order transaction routing 104, and multi-protocol support 106 for numerous standard ways of exchanging content and transaction information.

For buying organizations 112, the system 150 links them into a single coterminous network making if far easier for buyers to conduct eCommerce with many suppliers. Similarly, for selling organizations 114, the system 150 links buyer networks 112 together in a seamless network environment making it easier for a suppliers 114 to conduct eCommerce with many buyers 112.

Referring to Figs. 3 and 4, supplier catalogs are stored on supplier networks 114 in a standard Catalog Interchange Format (CIF) 403a and 403b. An index 408 to the supplier catalogs 403 is created and stored on the system server 150. (This step is denoted as "1" in the figure.) When a customer using Ariba ORMS 404 wishes to purchase an item, he submits a query to the system server 406 (step 2). Software on the system server 406 searches the index 408 on the system server 406 based on the customer-submitted query and returns, as the search result, universal resource locators (URL's) pointing to catalog data on the appropriate supplier network 402a and 402b (step 3).

The customer 404 follows one or more URL's (step 4) to retrieve the catalog data directly from the supplier network (in this case from supplier

B network 402b) (step 5). Based on the catalog data retrieved from the supplier network 402b, the customer using Ariba ORMS 404 generates a requisition and submits the requisition via ordering software 410 on the system server 406 (step 6). The ordering software 410 translates the requisition into a format desired by the particular supplier to which the requisition is destined, and forwards the requisition on to the supplier network 402b (step 7) in most cases.

The system services include:

- Supplier Registration 110

- Order Transaction Routing 104

- Catalog Content Management 102

- Community News and Information 109

- Future Services (not shown)

Fig. 5 shows how the system 150 provides a single self-service network access point 115 for suppliers to register their contact information, content data, order preferences and profile information – to tell the system 150 and, thus, buying organizations 112, where they are, how to communicate with them, where on the supplier's system 114 to find its catalogs, etc. Ariba ORM systems at buying organizations 112 may be automatically configured to use the system 150 to leverage the available supplier information. Any supplier 114 can join without the involvement of any buyer 112, thus creating an "open, free market".

To conduct commerce with all buying organizations using Ariba ORMS, suppliers 114 need only register once. This single point of access for suppliers makes the system 150 massively scalable, simplifying their business interactions with hundreds of business buyers.

Order transaction routing 104 is now discussed. As shown in Fig. 6, the system 150 creates a single network access point 117 for buyers 112 allowing them to send orders and conduct eCommerce with any supplier 114 connected to the system 150 without having to configure trading relationships, standards or content. That is, the buying organization 112 need know nothing about the preferred ordering methods of the supplier 114.

The system 150 routes orders from Ariba ORMS buyers 112 to appropriate suppliers 114 using the Internet. The connection between Ariba ORMS systems 112 to the system 150 occurs via an Order Sender Toolkit. The Order Sender Toolkit is an ordering module that securely transmits orders to the system 150 using encryption and secure transports. The system 150 order routing 104 provides secure and reliable order conveyance. Buyers 112 and suppliers 114 receive order confirmations as well as transaction histories and full audit trails. Comprehensive error handling capabilities exist for all stages of the transaction process.

The system 150 uses a scalable and reliable system for processing and routing electronic purchase orders. The system inserts orders as they arrive into a relational data store and places then into one or more queues also maintained in a relational data store. Several processes can run in parallel, each processing orders from one or more queues. Once an entry in a queue is processed, it is marked as such preventing duplicate processing. As the result of being processed via a queue by one of the processes, an order can get inserted into one or more other queues for further handling by other processes.

Row level locking is employed to avoid duplicate handling by processes running concurrently. The system uses intermediate states for entries to recover from abnormal situations such as hardware failures.

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The system employs monitoring programs that can monitor the size of the various queues. It can start or stop processes on different machines on the network to process queues depending on their sizes. Thus, the system can process electronic orders in parallel in a reliable and scalable fashion.

Suppliers 114 can register their order transport and routing preferences 116 once via the system 150 to conduct business with any Ariba ORMS customer 112. They may change their preferences over time, for example as their internal systems become more sophisticated. The system 150 translates transactions between buyer 112 and supplier 114 preferred formats using major eCommerce standards as shown in Fig. 6. The level of technical enablement of the system 150 usually determines which ordering options they choose. In all cases, the buying organization 112 is free from the transaction complexity of supporting a myriad of order communications options. For example, order transport and routing options 116 may include:

- Commerce XML (cXML);

- Internet-based Electronic Data Interchange (Internet EDI);

- Value Added Network-based Electronic Data Interchange (VAN EDI);

- Open Buying on the Internet (OBI);

- Remote driven supplier ordering web-site;

- Secure HTML;

- Electronic mail; and

- Auto-Fax.

Additional order routing options may be included and/or added as requested by the system 150 supplier community.

Catalog content management 102 service is provided. Fig. 7 shows how the system 150 provides a single access point for buyers and suppliers to manage and exchange catalog content directly between each other, such as through a URL. Several content management paradigms are available to equip buyers and suppliers with options appropriate to their business models.

With supplier managed content features, the system 150 provides suppliers with a full range of rich features to manage their catalog content. This allows publishing, again via URL, of buyer-specific product offerings, while also providing opportunities to participate in additional sales available from the system 150. For suppliers 114, the features available via the system 150 are effective for managing these product and service offerings. For buyers 112, the system 150 provides a full set of features that greatly simplifies content integration across multiple suppliers.

Supplier managed content features include:

- Access as shown in Fig. 4 to catalog content from multiple suppliers 114 via "a" to a central "inbox" (406 in Fig. 4) and from the inbox via "b" to for buying organizations 112. Consistent with the distributed architecture of the system 150, the "inbox" has a URL or a pointer via "c" to the catalog content on the supplier system and not the catalog content itself which is transferred from the supplier to the buyer via "d".

- Ability to validate and publish customer specific catalogs to the relevant buying organization, via the same "inbox" 408 mechanism;

- Ability for buyers belonging to different organizations in a single company to exchange validated catalog content with others in the same enterprise;

- Repository of indices to catalog data maintained at supplier sites for exchange and management of catalog content;

- Bi-directional conversion of an index between catalog files in various formats;

- Catalog content validation. Syntactic validation provides for the physical and positional accuracy of the supplier files (i.e. required fields exist, commas in the right place, numeric fields use numbers, etc.) Semantic validation provides for field level checking to ensure proper supplier identification is used, product classification codes are valid and other important parameters are valid within the context of the relevant buying organization;

- Edit capabilities for catalog files that have errors as identified by the validation facility;

- Wizard-driven supplier user interface;

- Product classification look-up for catalog line items;

- Summary information regarding catalog files in various stages, including those published to buyers, submitted by suppliers, submitted for validation, etc.

Increasingly, suppliers are desirous of building sophisticated business-to-business eCommerce systems that establish unique branding and competitive differentiation for corporate buying. For instance, a supplier may have a powerful configuration engine that a buyer uses to configure complicated products. The Ariba solution fully leverages these advanced systems to facilitate the buying process.

For example, in one embodiment, the Ariba Operating Resource Management System (Ariba ORMS) supports an advanced technique known as "punch-out." Punch-out is a supplier content integration model

that uses eXtensible Markup Language (XML) and the supplier's advanced eCommerce system. From the Ariba ORMS, the punch-out technique allows the user to link to a supplier's eCommerce web-site. User authentication occurs via credentials that Ariba ORMS sends to communicate the user's organization and profile information. Once authenticated, the user 112 receives personalized greetings and content appropriate to their use that reflects their customer-specific pricing. The user 112 then finds products of interest using whatever facilities are available at the supplier's site 114 (e.g., a search engine on the supplier's site), and adds items to their supplier-based shopping basket. Finally, the secure transmission of the resulting product selections occurs to the user's requisition in the Ariba ORMS at the buying organization 112.

The system 150 provides community news and information as a service to buyers and suppliers. The dissemination of pertinent information and the enhancement of communication represent important objectives for the system. As such, the following are informational services and community forums planned.

- Industry news, product reviews and events for suppliers;

- Vertical community forums and messaging between buyers and suppliers;

- Editorialized content regarding system 150 events, product releases and services;

- Access to informational libraries such as Dun & Bradstreet and Hoovers for company or industry research;

- Buyer sourcing guides;

- Supplier evaluation and satisfaction ratings;

- Buyer and supplier profile information;

- Partner information.

In other embodiments, several additional services for buyers and suppliers using the system 150 may be provided, including:

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- Auctions for surplus materials;

- Pre-negotiated supplier contracts;

- Vertical industry buying consortiums;

- Government contracts center;

- RFP/RFI listing services;

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- Ad-hoc purchasing services;

- Strategic sourcing.

The system 150 commerce solution has the two components that collectively provide seamless end-to-end integration of processes, systems and organizations involved in the acquisition cycle for operating resources. The Ariba ORMS provides the sophisticated global enterprise system that efficiently automates and connects internal users, systems and processes. The system 150 provides the secure and massively scalable Internet infrastructure for efficiently connecting buyers and suppliers.

With the system 150, Ariba ORMS users are seamlessly linked to supplier networks while suppliers are seamlessly linked to buyer networks to create a global purchasing network of operating resources. The synergy between the buying power of Ariba ORMS and the high-throughput supplier community of the system 150 results in new opportunities for return on investment and decreased costs of implementation and maintenance.

The system 150 provides extended integration of corporate intranets, supplier extranets, the internet and private networks of value added content. This combination delivers an entire value chain via integration with important resources inside and outside the enterprise, and automate the interactions of trading partners.

What is claimed is:

1. In a system for electronically ordering items having at least one supplier computer system, each of which has means for creating and storing at least one catalog containing items
5   offered by the supplier and a customer computer system, a public computer system comprising:

    an index to the items in the catalogs on the at least one supplier computer system;

    means for querying the index on the public computer system for a desired item in response to a request for the desired item from the customer computer system, and

10 means for generating a pointer for the customer computer system to catalog information about the desired item in the catalog on the at least one supplier system identified by the query of the index.

2. In the system of claim 1, and further comprising:
15 means in the public computer system for electronically ordering the desired item responsive to an order from the customer computer system based on the catalog information about the desired item accessed from the at least one supplier computer system.

20 3. In a system for electronically ordering items having at least one supplier computer system storing at least one catalog containing items offered by the supplier, a customer computer system and a public computer system, the method of enabling customers to view and order items from said at least one catalog comprising the steps of:

    creating and storing on said public computer system an index to the items in the catalogs
25 on the at least one supplier computer system,

    querying the index on the public computer system for a desired item in response to a request for the desired item from the customer computer system, and

    in responsive to query location of the desired item on the index generating a pointer for the customer computer system to catalog information about the desired item in the catalog on
30 the at least one supplier system.

4. In the system of claim 3, and further comprising:

ordering the desired item from the supplier computer system in response to an order for the desired item from the customer computer system based on the catalog information about the desired item accessed from the at least one supplier computer system.

5. 5. A system for electronically ordering items, comprising:

at least one supplier computer system, each of which has means for creating and storing at least one catalog containing items offered by the supplier;

a public computer system containing an index to the items in the catalogs on the at least one supplier computer system;

10. a customer computer system having

means for querying the index on the public computer system for a desired item,

means for receiving a pointer to catalog information about the desired item in the catalog on the at least one supplier system; and

means for accessing the catalog information about the desired item on the at least

15. one supplier computer system, based on the received pointer.

6. The system of claim 5, and further comprising:

means for electronically ordering the desired item based on the catalog information about the desired item accessed from the at least one supplier computer system.

20.

7. A public computer system comprising:

an index to the items in the catalogs on the at least one supplier computer system, the catalogs on the at least one supplier computer system containing items offered by the supplier;

25. means for querying the index on the public computer system for a desired item in response to a request for the desired item from a customer computer system, and

means for generating a pointer, accessible to the customer computer system, to catalog information about the desired item in the catalog on the at least one supplier system identified by the query of the index.

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8. The public computer system of claim 7, and further comprising:

means in the public computer system for electronically ordering the desired item responsive to an order from the customer computer system for the desired item.

9.   The public computer system of claim 8, and further comprising:

means for converting the order from the customer computer system from a first protocol, in which it was sent by the customer computer system, to a second protocol, and providing the order to one of the at least one supplier computer systems in the second protocol.

10.   The public computer system of claim 9, and further comprising:

means for registering the second protocol in response to a registration request from the one of the at least one supplier computer systems.

11.   The public computer system of claim 9, wherein the second protocol is one of:

Internet EDI;

VAN EDI;

OBI;

commerce XML;

secure HTML;

electronic mail; and

auto-facsimile.

12.   The public computer system of claim 8, and further comprising:

means for providing confirmation information of an order back to the customer computer system.

13.   The public computer system of claim 7, wherein the public computer system and the customer computer system are connected via a global computer information network.

14.   The public computer system of claim 7, wherein the public computer system and the customer computer system are connected via the internet.

15.   The public computer system of claim 7, and further comprising:

means for providing at least a portion of the index to the customer computer system.

16.   In the system of claim 15, and further comprising:

means in the customer computer system for querying an index on a public computer
system for a desired item, wherein the index on the public computer system is an index to
items in catalogs on at least one supplier computer system, the catalogs on the at least one
supplier computer system containing items offered by the supplier; and

means in the customer computer system for generating a pointer to catalog information
about the desired item in the catalog on the at least one supplier system identified by the
query of the index.

17.   In the system of claim 16, and further comprising:

means on the customer computer system for generating an order for the desired item.

18.   In the system of claim 17, wherein the order generating means includes means for
generating the order based on the catalog information about the desired item accessed from
the at least one supplier computer system.

19.   The public computer system of claim 7, and further comprising:

means for receiving registration data from the at least one supplier computer system, the
registration data including information relating to how the public computer system may
facilitate communication by the customer computer system with the at least one supplier
computer system, via the public computer system.

20.   The public computer system of claim 7, and further comprising:

means for creating the index for the catalogs on the at least one supplier system.

21.   The public computer system of claim 20, wherein the index creating means includes
means for locating the catalogs on the at least one supplier system based on registration
information previously provided to the public computer system from the at least one
supplier system.

22.   In the system of claim 7, and further comprising:

in the customer computer system, means for generating an order for the desired item.

23.   In the system of claim 22, wherein the order generating means in the customer computer
system includes means for generating the order based on the catalog information about the
desired item accessed from the at least one supplier computer system.

24.   A customer computer system, comprising:

means for querying an index on a public computer system for catalog data on a desired
item, wherein the index on the public computer system is an index to items in catalogs on
at least one supplier computer system;
means for accessing a pointer that is an output of the querying means; and
means for accessing the catalog data about the desired item on the catalogs on the at least
one supplier computer system, based on the accessed pointer.

25.   The customer computer system of claim 24, and further comprising:
means for ordering the desired item.

26.   The customer computer system of claim 25, wherein the ordering means includes means
for creating a requisition based on the accessed catalog data.

27.   The customer computer system of claim 26, wherein the ordering means includes means
for providing the requisition to the public computer system.

28.   In a system for electronically ordering items having at least one supplier computer system,
each of which has means for storing at least one catalog containing items offered by the
supplier, a public computer system comprising:

means for managing content of the at least one catalog on the at least one supplier
computer system; and

means for providing a pointer to the at least one catalog, wherein the pointer is
accessible to a customer computer system.

29.   In the system of claim 28, wherein the pointer providing means includes means for providing a universal resource locator (URL) as the pointer.

30.   In the system of claim 29 wherein the content managing means on the public computer system includes means for validating both syntax and semantics of the at least one catalog on the at least one supplier computer system.

31.   A customer computer system, comprising:

means for querying an index on a public computer system for a desired item, wherein the index on the public computer system is an index to items in catalogs on at least one supplier computer system, the catalogs on the at least one supplier computer system containing items offered by the supplier; and

means for accessing a pointer to catalog information about the desired item in the catalog on the at least one supplier system identified by the query of the index.

32.   The customer computer system of claim 31, and further comprising:

means for generating an order for the desired item.

33.   The customer computer system of claim 32, wherein the order generating means includes means for generating the order based on the catalog information about the desired item accessed from the at least one supplier computer system.

FIG. 1

**FIG. 2**

FIG. 3

FIG. 4

FIG. 5

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FIG. 6

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Supplier Networks

cXML	Supplier
HTML	Supplier
EDI	Supplier
HTML	Supplier

ASL Networks

ASL Member
ASL Members
ASL Members
ASL Members

Validated Catalog

Public Internet

Ariba.COM

Order Routing	cXML
	Internet EDI
	VAN–EDI
	Secure HTML
	Auto–FAX
	Email

Supplier Registration

Catalog Management

News, Information Sourcing, Services

150

102
(Including inbox 406)

Corporate Intranet

Ariba.ORMS

112

Corporate Intranet

Ariba.ORMS

112

Corporate Intranet

Ariba.ORMS

112
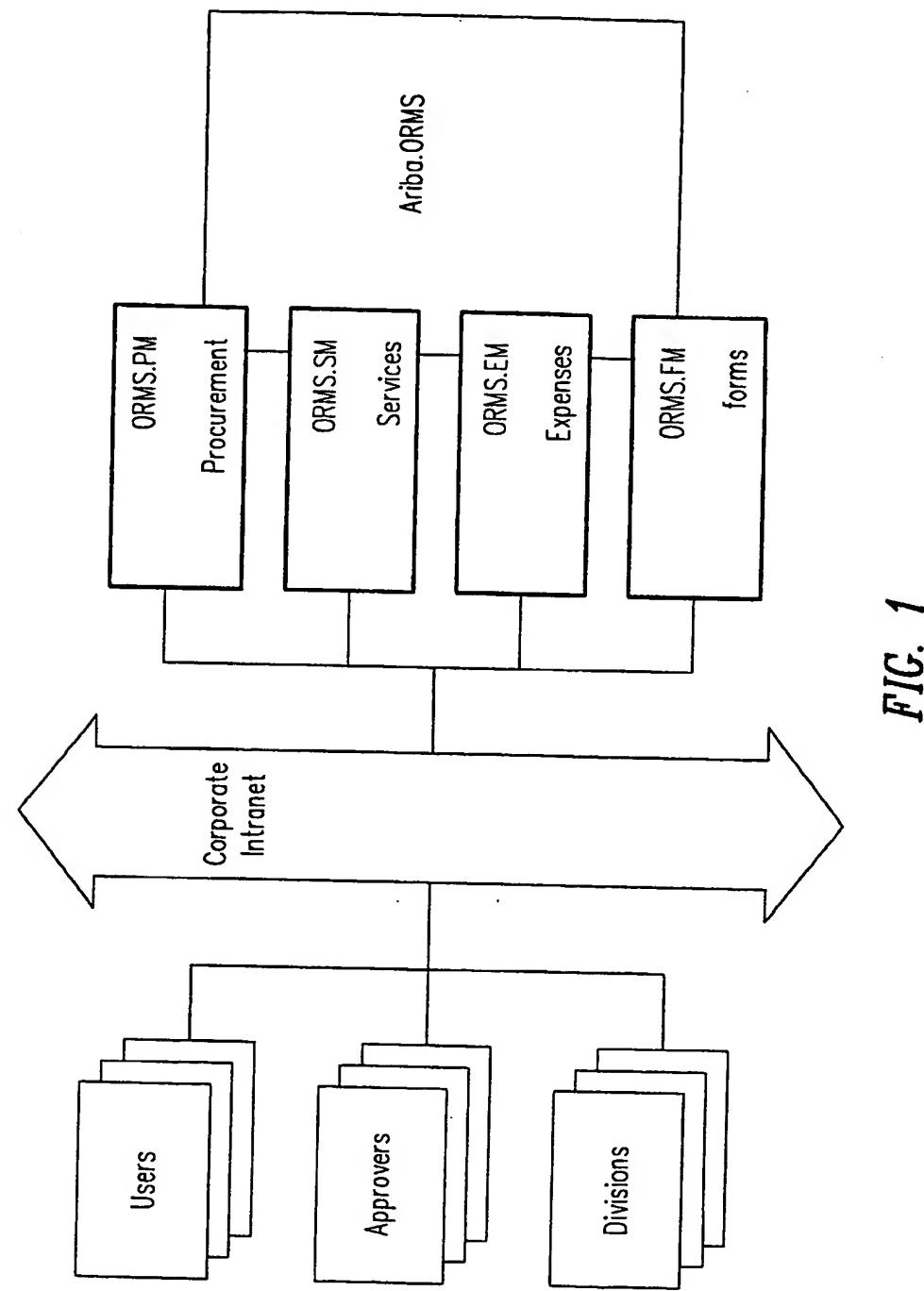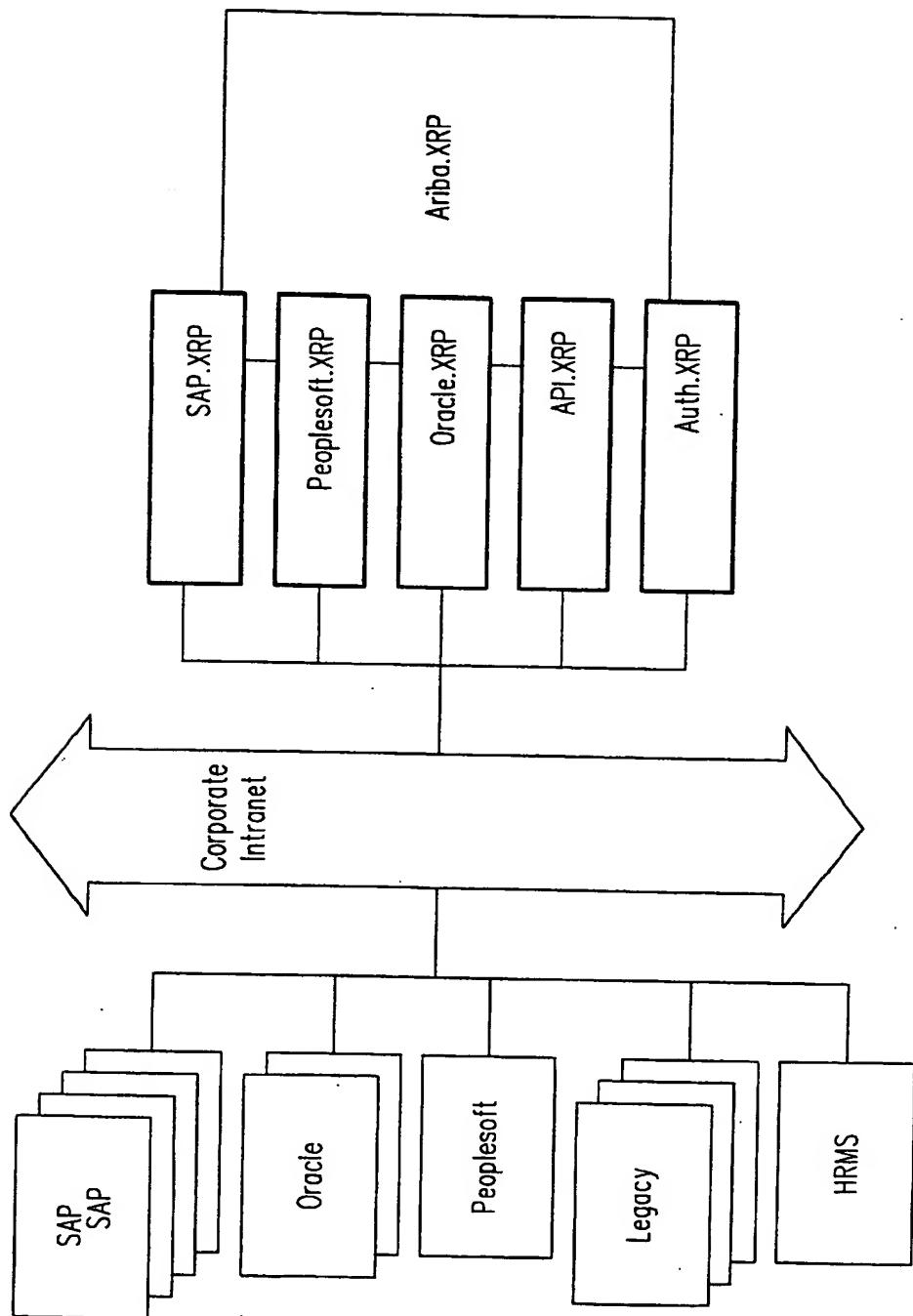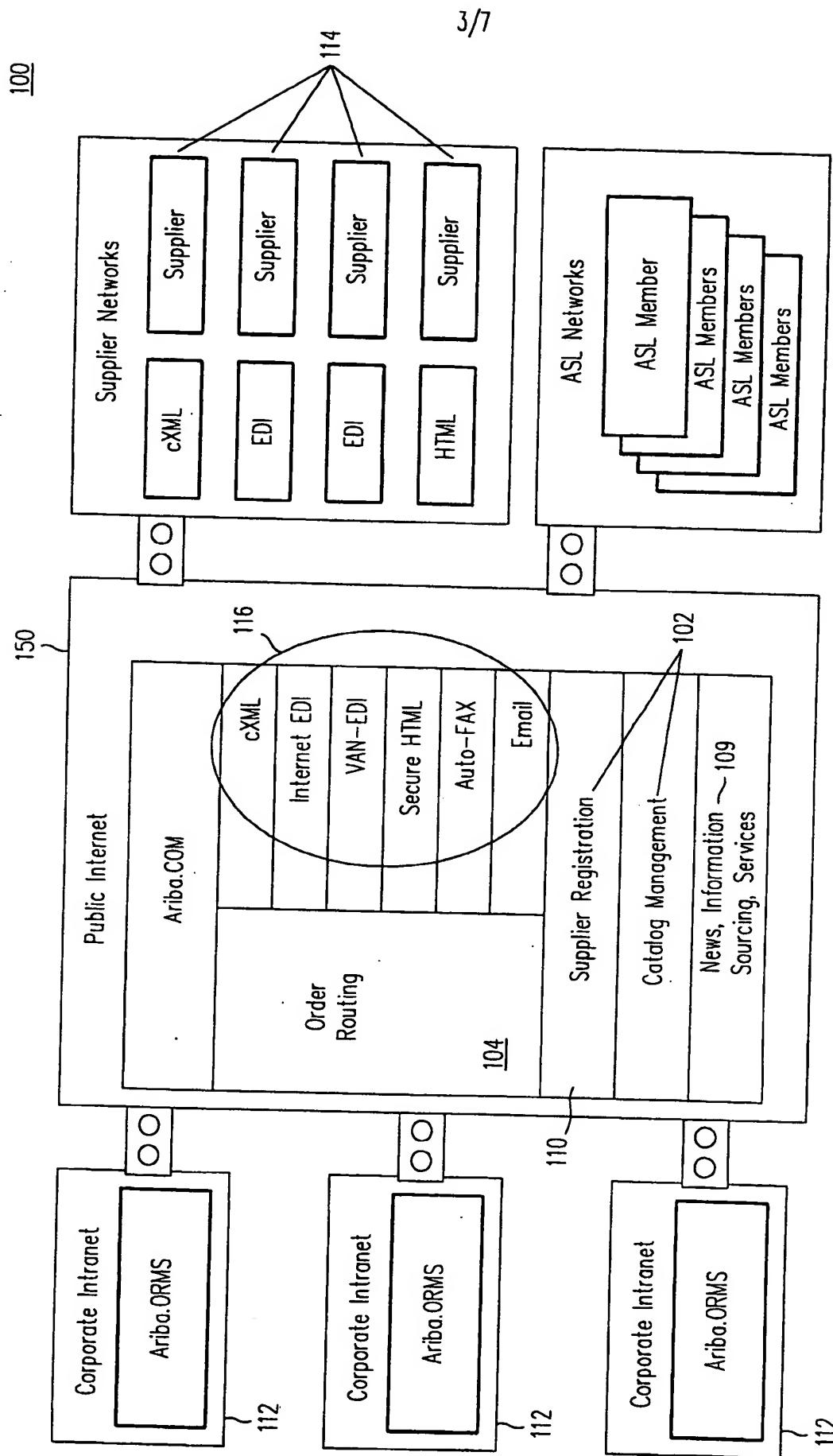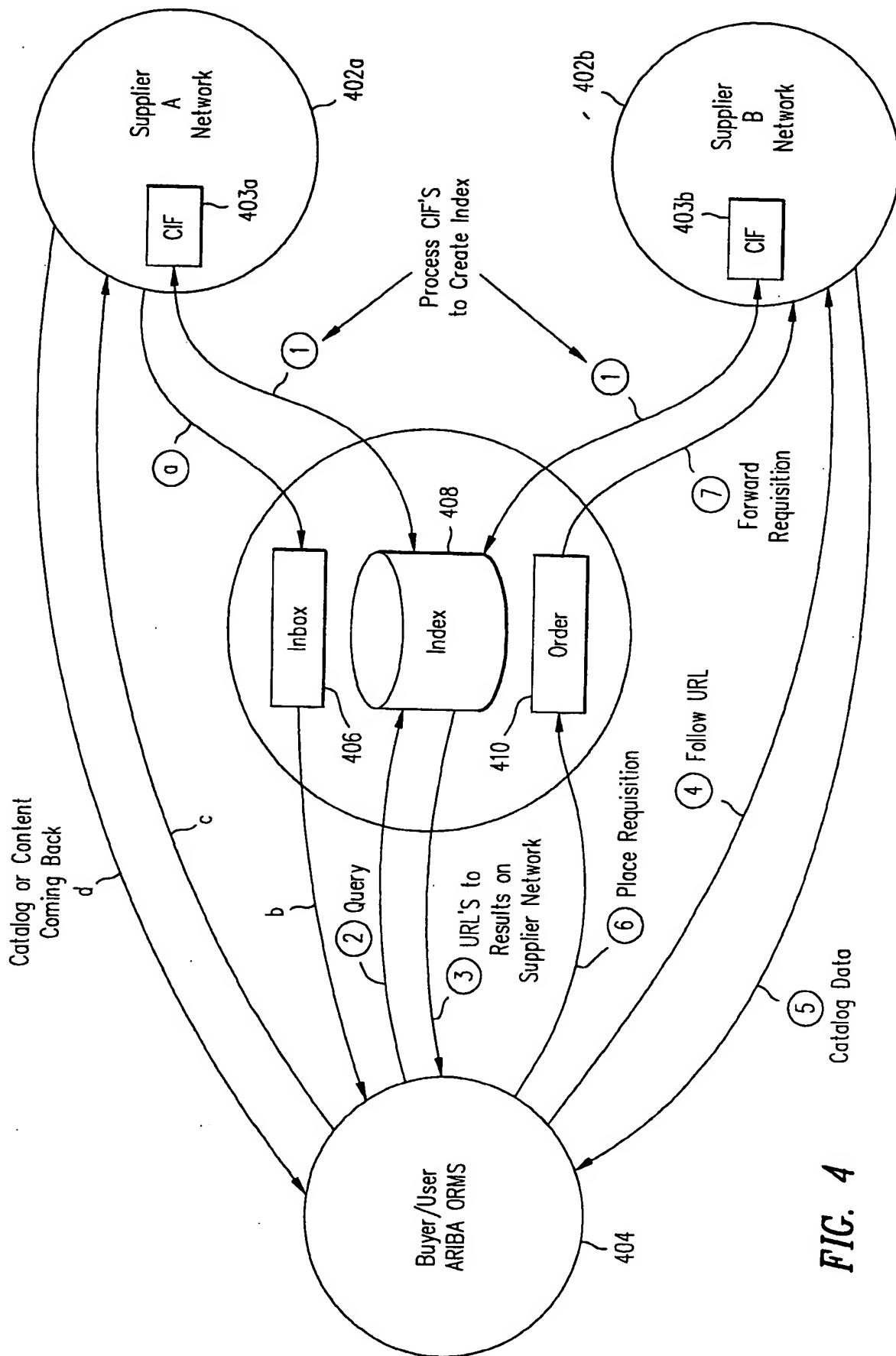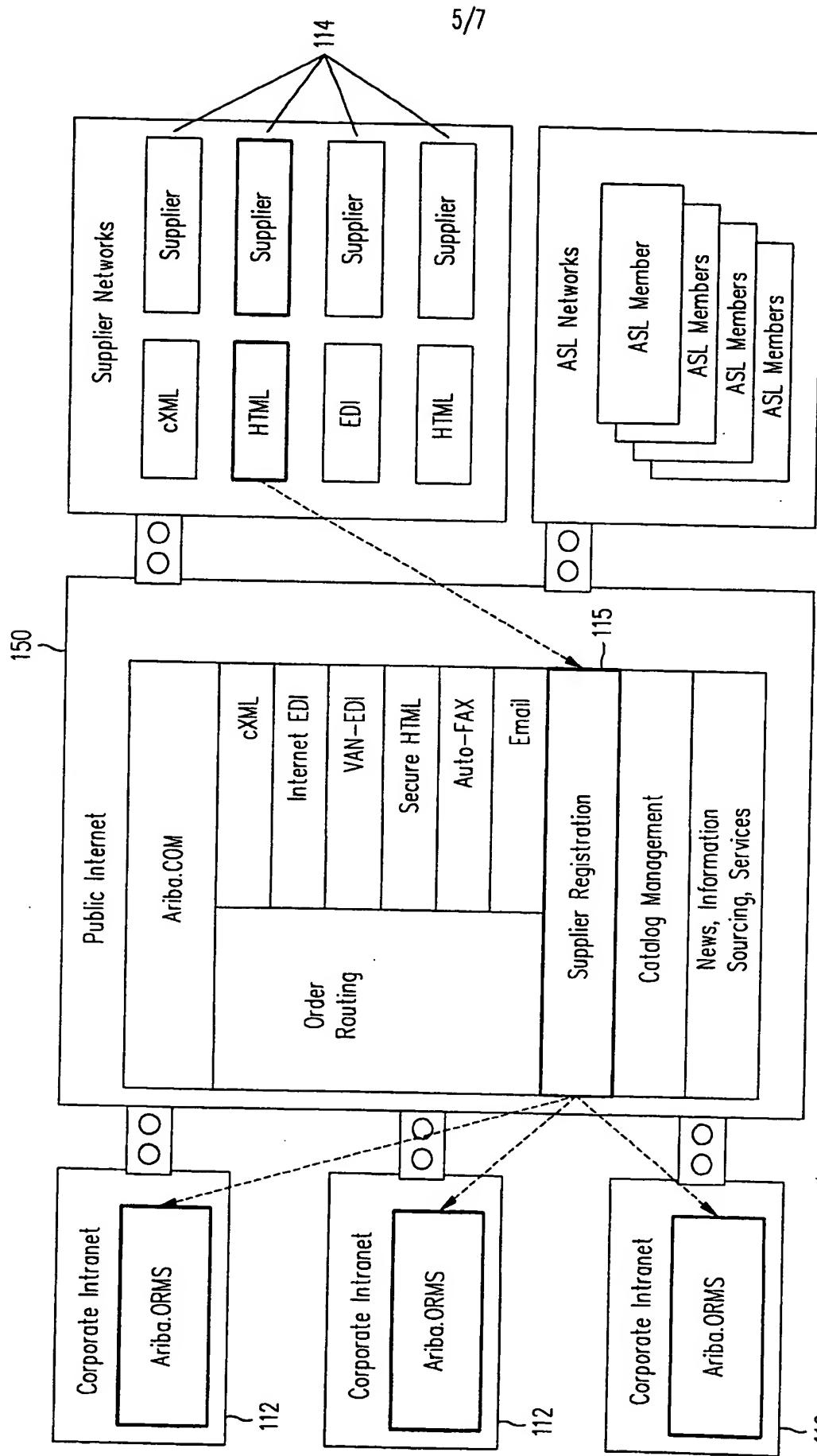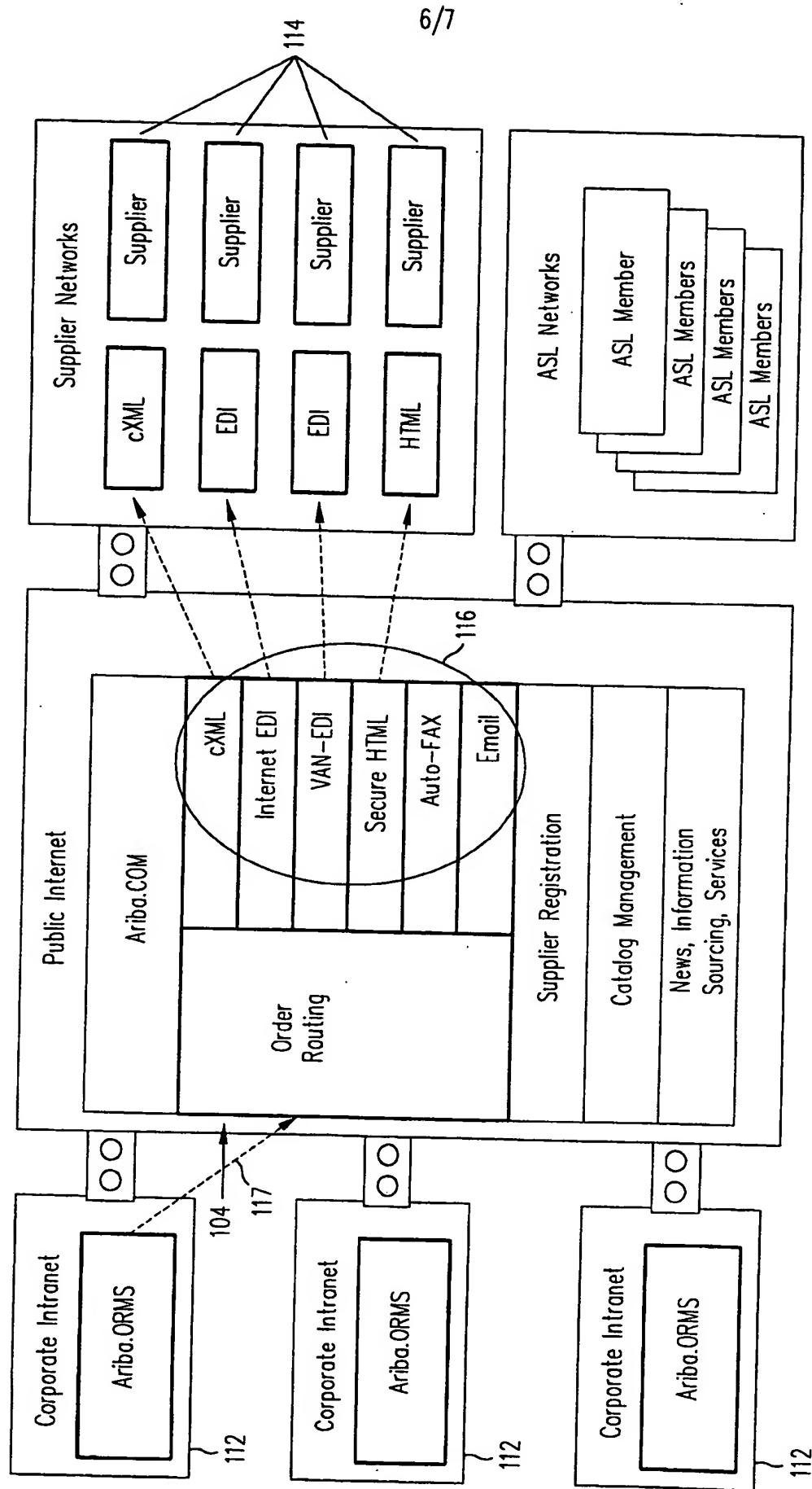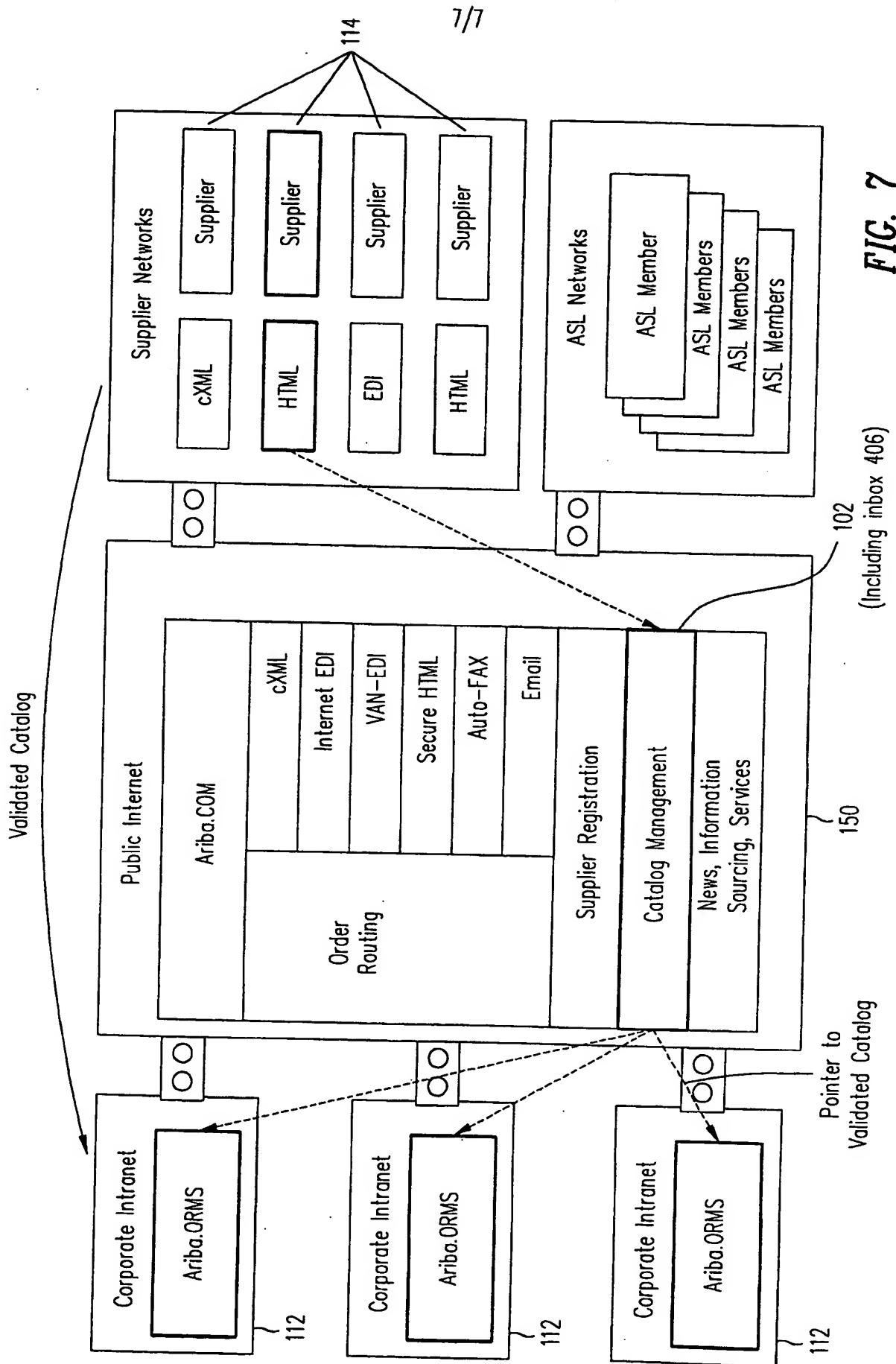
Pointer to Validated Catalog

FIG. 7

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :G10L 17/60, 151:00, 153:00
US CL :705/27; 707/4, 501

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/27; 707/4, 501

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	UNKNOWN. Technology Spares Buyers the Hassle of Maintaining Catalogs. Purchasing. 23 April 1998, Vol. 124, No. 6, Page 91	1-33
---	DALTON, G. Actra to Help Purchasing. InformationWeek, 10 November 1997, No. 656, Pages 84-85.	---
Y		1-33
A	US 5,319,542 A (KING, JR et al) 07 June 1994, see abstract.	1-33
A	Operating Resources Management - Leveraging the "Total Spend" of a Company. Killen & Associates. 23 June 1997 [retrieved on 2000-05-24]. Retrieved from the Internet: <URL:www.summitonline.com/sysmanage/papers/killen1.html>	1-33

☒ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

	Special categories of cited documents		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 MAY 2000	27 JUN 2000

Name and mailing address of the ISA/US	Authorized officer
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Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HARRISON, D. Web-Buying Extension Unveiled for R/3. ENT. 20 August 1997, Vol. 2, No 12, Page 3.	1-33
A	UNKNOWN. Industry Briefs. Electronic Commerce News, 5 January 1998, Vol. 3, No. 1.	1-33

INTERNATIONAL SEARCH REPORT

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

STN, EAST, WEST, DIALOG (database: Finbus)
search terms: internet, world wide web, web page, web site, online, web, operations resource management, catalog aggregator, ecommerce, electronic commerce, business to business, b2b, database